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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,575	09/24/2001	Shinichi Imai	0819-0651	7295
22204	7590	01/16/2004	EXAMINER	
NIXON PEABODY, LLP			MAGEE, THOMAS J	
401 9TH STREET, NW			ART UNIT	
SUITE 900			PAPER NUMBER	
WASHINGTON, DC 20004-2128			2811	

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/960,575	Applicant(s) IMAI, SHINICHI	
	Examiner Thomas J. Magee	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on October 24, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3, 4 and 6 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "*a breakdown ratio of the capacitance insulating film is essentially 0 during plasma etching for forming the contact holes.*" Examiner can find no explicit recitation in the specification that the breakdown ratio of the insulating film is 0 during plasma etching and hence, the phrase contains new matter.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections – 35 U.S.C. 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 and 2 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. On page 20 of the instant application Applicant defines the quantity "L" in the

ratio, S/L , as the sum of the widths, w , "of the lead conductive films in the boundary line between the active region and the isolating region." In Claim 1, Applicant recites "a total sum of widths of the lead conductive films in the boundary portion." In both cases there is no recitation of how to determine " w " within a distance at the boundary. Further, in Claim 2, Applicant is reciting a value for, S/L , based upon the definition of L in the specification as the sum of widths determined in the boundary region. The lack of clarity would make it extremely difficult for one skilled in the art to practice and use the invention, because of the ambiguity in the recitation.

Claim Rejections – 35 U.S.C. 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (US 5,691,556).

6. Regarding Claim 1, Saito et al. disclose (Col. 21, lines 26 – 42) an integrated circuit containing capacitors, where an active region and an isolating region (17) (See Figure 1) enclosing the active region with an insulating film (22) on the active region and a boundary in contact with the isolating region (17). An upper conducting plate (21) atop the insulating

Art Unit: 2811

film spaced away from the isolating region is formed and an electrode pad (14) formed on the isolating region wherein a lead conductive film is provided over a part of the capacitance insulating film (22) and a part of the isolating film (17) for connecting the upper electrode (14) and the electrode pad.

7. Regarding Claim 16, Saito et al. disclose (See Figure 5) that the widths of the lead conductive films (11, 12, and 14) are substantially constant.

8. Regarding Claim 17, Saito et al. disclose (Col. 21, lines 26 – 42) a semiconductor device containing a substrate (15), capacitors, where an active region and an isolating region (17) (See Figure 1) enclosing the active region are provided on a silicon layer (24) with an insulating film (22) on the active region with a boundary in contact with the isolating region (17). An upper conducting plate (21) atop the insulating film with a portion over the isolating region is electrically continuous and corresponds exactly with the electrically continuous pad, lead conductive film and upper electrode recited in the instant application. Further, Saito et al. discloses that an interlayer insulating film is formed over the substrate with contact holes penetrating the interlayer insulating film to reach the electrode pad with a capacitance insulating film having a larger thickness in the boundary portion than in other portion.

Claim Rejections – 35 U.S.C. 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obvious-

Art Unit: 2811

ness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al., as applied to Claims 1, 16, and 17.

Saito et al. do not disclose a numerical value of 4 or less for the ratio, S/L . However, Saito et al. disclose that the electrode pad, 14, (Figure 2) overlays the lead conductive film in the lateral region (right hand side) and that the width, L , would be within the area (S) of the electrode pad to make electrical contact between the two. It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the width of the lead conductive film with respect to the electrode pad to obtain a contact free of fringing effects such that $S/L < \text{or} = 4$. Since these elements are repetitive in the circuit, the total can then be obtained by multiplying by the number of elements, n , in numerator and denominator, which then cancel.

Allowed Subject Matter

12. Claims 3, 4, and 6 are allowed.

The prior art of record do not reasonably teach or suggest, either singularly or in combination, the limitation in Claim 3 of *"the active region in contact with the boundary portion includes a region containing impurities having an oxidation enhanced diffusion effect."*

The prior art of record do not reasonably teach or suggest, either singularly or in combination, the limitation in Claims 4 and 6 of *"a total sum of exposed areas of the second active*

region in the second contact holes is smaller than a total sum of exposed areas of the electrode pad in the first contact holes.”

Response to Arguments

13. Applicant's arguments in regard to claims have been fully considered but they are not persuasive. Response to the 35 U.S.C. 112 rejection of Claims 1 and 2 is not acceptable and the rejection remains. There is no definitive explanation of how to determine lengths in the boundary region.

Amended Claim 1 has also been objected to on the basis of new matter inserted.

Conclusions

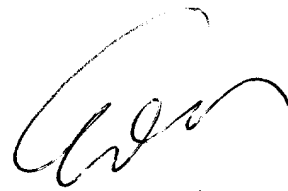
14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2811

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Thomas Magee**, whose telephone number is **(703) 305 5396**. The Examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM (EST). If attempts to reach the Examiner by telephone are unsuccessful, the examiner's supervisor, **Tom Thomas**, can be reached on **(703) 308-2772**. The fax number for the organization where this application or proceeding is assigned is **(703) 308-7722**.

Thomas Magee
December 29, 2003



THOMAS MAGEE
SUPERVISOR OF EXAMINERS
DEC 29 2003